IN THE CLAIMS:

1. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, ~~which is obtained by hybridizing a target with DNA, said target being obtained by adding a desired fluorescent material to a DNA fragment formed by preprocessing from DNA that is an object to be inspected, said DNA chip including a plurality of L cells that are microscopic areas where a plurality of types of desired fragments are arranged in accordance with a predetermined rule,~~ comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of multi-spot excitation lights ~~simultaneously~~ through an objective lens for a time Δt that is longer than a fluorescent light attenuation time so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, ~~said DNA chip,~~ where each light of said multi-spot excitation lights having a spot diameter d that is smaller than ~~a dimension~~ the dimensional size D of a DNA probe cell that it irradiates; ~~said each cell of said plurality of L cells,~~

dividing ~~an optical pass of~~ said generated fluorescent lights from said plurality of multi-spot excitation lights into separate fluorescent lights along separate optical paths; ~~lights,~~

detecting said separate fluorescent lights with a sensor after reducing components of said multi-spot excitation lights reflected from said DNA chip, ~~and entered into said optical pass of said generated fluorescent lights, and getting information on~~ so as to catalog positions and intensities of ~~said~~ detected fluorescent lights ~~so as to enable measurement~~ which are representative of a coupled state of the hybridized target DNA on said DNA chip.

2. (Previously presented) The method as claimed in Claim 1, wherein said plurality of multi-spot excitation lights are arranged in a 1-dimensional or 2-dimensional configuration.

3. (Currently Amended) The method as claimed in Claim 1, comprising:

arranging said plurality of multi-spot excitation lights irradiated onto said DNA chip on a straight line with a spacing of kd with reference to said spot diameter d and an integer k; and ~~, and~~

repeating an operation in sequence k times, said operation being an operation where, after said irradiation with said plurality of multi-spot excitation lights ~~spot array~~ has been performed during said time Δt, said plurality of multi-spot excitation lights are ~~array is~~ displaced in substantially a direction of said straight line by substantially d and said irradiation is performed again during said time Δt; and thereby ~~, and thereby~~

executing said inspecting ~~inspection~~ toward kM spot positions substantially in said straight line direction; and ~~, and~~

displacing said DNA chip and said objective lens relatively at least in a direction substantially perpendicular to said straight line direction; and thereby ~~, and thereby~~

inspecting a desired 2-dimensional area on said DNA chip.

4. (Currently Amended) The method as claimed in Claim 1, comprising providing fluorescent light detection deflecting means within said separate optical paths ~~fluorescent light detecting optical path~~ so that said generated fluorescent lights ~~generated by said plurality of multi-spot excitation lights~~ are synchronized with ~~said~~ displacement of said plurality of multi-spot excitation lights ~~spot array in said array direction~~ and come onto substantially the same location on light-receiving apertures.

5. (Currently Amended) The method as claimed in Claim 4, wherein said fluorescent light detection deflecting means includes a wavelength selection beam splitter for permitting said plurality of multi-spot excitation lights to pass therethrough and causing said generated fluorescent lights to be reflected.

6. (Currently Amended) The method as claimed in Claim 1, comprising providing a filter within ~~said~~ a fluorescent light detecting optical path isolated from an excitation optical path, said filter permitting only said generated fluorescent lights to pass there-through while light-shielding said plurality of multi-spot excitation lights.

7. (Currently Amended) The method as claimed in Claim 1, comprising forming said plurality of multi-spot excitation lights by using a plurality of laser light-sources.

8. (Currently Amended) The method as claimed in Claim 7, wherein said plurality of multi-spot excitation lights are obtained by:

guiding, into optical fibers, ~~said~~ lights emitted from said plurality of laser light-sources; and ~~, and~~

causing said lights to be emitted from light-emitting ends of said optical fibers, said light-emitting ends being aligned with M desired pitches.

9. (Currently Amended) The method as claimed in Claim 1, wherein said plurality of excitation lights include a plurality of different wavelengths, and the method comprising distinguishing ones of the DNA probe cells as different targets on said DNA chip, where a plurality of fluorescent materials ~~having been added~~ responsive to ones of the plurality of different wavelengths are used to distinguish a plurality of ~~to said~~ different targets.

10. (Currently Amended) The method as claimed in Claim 9, comprising:

performing simultaneous irradiation with said plurality of multi-spot excitation lights including said plurality of different wavelengths; and thereby ~~, and thereby~~

distinguishing said different targets on said DNA chip so as to simultaneously detect said different targets in accordance with said plurality of fluorescent materials. ~~materials having been added to said different targets.~~

11. (Previously presented) The method as claimed in Claim 1, comprising:

directing a second light with an oblique incident angle on an inspection plane of said DNA chip;

detecting a reflection position at which said second light is reflected on said inspection plane; and

controlling a relative distance between said inspection plane and said objective lens in accordance with a result of detection of said reflection position.

12-17. (Withdrawn)

18. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

branching a laser beam so as to form eight or more beams, said laser beam being emitted from at least one laser light-source; ~~light-source,~~

after sample exposure/coupling, simultaneously irradiating a corresponding eight or more of the DNA probe cells on an inspection plane of a DNA chip with said eight or more beams, respectively, for a time Δt that is longer than a fluorescent light attenuation time so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells,

where each beam of said eight or more beams having a spot diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates; ~~beams,~~

separating fluorescent lights emitted from irradiated ones of the DNA probe cells of said DNA chip, ~~by the irradiation of said branched laser beams~~ from reflected lights of said eight or more beams; ~~beams so as to detect said fluorescent lights,~~

detecting said separated fluorescent lights with a sensor; and ~~, and~~

getting information from said DNA chip ~~in accordance with information of~~ by cataloging position and intensities of ~~said~~ detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

19. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

branching a laser beam into a plurality of beams having substantially the same intensity, said laser beam being emitted from at least one laser light-source; ~~light source,~~

after sample exposure/coupling, simultaneously projecting ~~images of~~ said plurality of ~~branched~~ beams onto a corresponding plurality of the DNA probe cells on an inspection plane of ~~a DNA~~ the DNA chip through a projection optical unit, for a time Δt that is longer than a fluorescent light attenuation time so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, where each beam having a spot

diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates; ~~unit,~~

detecting, through an imaging optical unit, images of fluorescent lights emitted from irradiated ones of the DNA probe cells of said DNA chip; and ~~chip by said projected images of said plurality of beams, and~~

getting information from said DNA chip ~~on a basis of said detected images of said~~ by cataloging position and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

20. (Previously presented) The method as claimed in Claim 19, wherein said DNA chip is inspected by irradiating said DNA chip with said beams while displacing said DNA chip and said beams relatively in a 2-dimensional manner.

21. (Currently Amended) The method as claimed in Claim 19, wherein said DNA chip is irradiated with said ~~branched~~ beams arranged in 2-dimensions.

22. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of multi-spot excitation lights for a time Δt that is longer than a fluorescent light attenuation time so

as to emit fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, where each light of said multi-spot excitation lights having a spot diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates; ~~said DNA chip,~~

separating said fluorescent lights emitted from ones of the DNA probe cells of said DNA chip, from said plurality of multi-spot excitation lights; ~~lights,~~

detecting images of said fluorescent lights ~~emitted from said sample~~ by use of a plurality of light detecting devices capable of executing a photon counting; ~~counting,~~

photon-counting, individually, each of photon signals obtained from said respective light detecting devices; ~~devices,~~

storing, individually, data of photon-counted numbers Npm detected by said respective light detecting devices; ~~devices,~~

changing positions of said plurality of multi-spot excitation lights and a position of said DNA chip ~~sample~~ relatively, so as to store ~~in sequence~~ data of said photon-counted numbers from said respective light detecting devices; ~~devices,~~

collecting stored data on said photon-counted numbers over a desired range on said DNA chip; ~~sample,~~

constructing a fluorescent light image from said collected data; and ~~, and~~

deriving information for said DNA chip from information on said constructed fluorescent light image, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

23. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a sheet-shaped excitation light for a time Δt that is longer than a fluorescent light attenuation time so as to emit fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells; ~~a fluorescent light from said DNA chip,~~

separating said fluorescent lights emitted from ones of the DNA probe cells, from said sheet-shaped excitation lights; ~~lights,~~

detecting images of said fluorescent lights ~~emitted from said sample~~ by use of a plurality of light detecting devices capable of executing a photon counting; ~~counting,~~

photon-counting, individually, each of photon signals obtained from said respective light detecting devices; ~~devices,~~

storing, individually, data of photon-counted numbers Npm detected by said respective light detecting devices; ~~devices,~~

changing positions of ~~said~~ irradiation areas and a position of said DNA chip ~~sample~~ relatively, so as to store in sequence data of said photon-counted numbers from said respective light detecting devices; ~~devices,~~

collecting stored data on said photon-counted numbers over a desired range on said DNA chip; ~~sample,~~

constructing a fluorescent light image from said collected data, and

deriving information for said DNA chip in accordance with information on said constructed fluorescent light image, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

24. (Currently Amended) The method as claimed in Claim 22, wherein said multi-spot ~~multi-spot~~ excitation lights include 10 or more microscopic spots.

25. (Currently Amended) The method as claimed in Claim 24, wherein said multi-spot ~~multi-spot~~ excitation lights include 50 or more microscopic spots.

26. (Previously presented) The method as claimed in Claim 24, wherein said microscopic spots are arranged on a 1-dimensional straight line or a 2-dimensional array.

27. (Previously presented) The method as claimed in Claim 22 or 23, wherein said multi-spot excitation lights or said sheet-shaped excitation lights are colored lights having 2 or more wavelengths.

28. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA

probes are arranged on the DNA chip in a predetermined array, by detecting fluorescent lights generated from a fluorescent material on a DNA sample, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of multi-spot excitation lights or a sheet-shaped excitation light for a time Δt that is longer than a fluorescent light attenuation time so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, separating said fluorescent lights from said plurality of multi-spot excitation lights irradiated onto said DNA sample, ~~said fluorescent lights being emitted from respective multi-spots or sheet-shaped irradiation locations on said DNA sample that is obtained by irradiating said DNA sample with said excitation lights in the form of multi-spot excitation lights or sheet-shaped excitation lights,~~ said multi-spot excitation lights including M microscopic spots, where M is an integer; ~~the number of microscopic spots,~~

detecting fluorescent light images from said fluorescent lights emitted from said DNA chip ~~sample~~ with the use of a plurality of M light detecting devices in an average pixel detecting time of (300 μsec/M) or less; ~~less,~~

storing, individually, signals obtained from said respective light detecting devices: ~~devices,~~

changing, relatively, positions of said multi-spot excitation lights or said sheet-shaped excitation light ~~lights~~ and a position of said DNA chip ~~sample~~ so as to store said signals in sequence; ~~sequence,~~

collecting said stored signals over a desired range on said DNA chip; ~~sample,~~

constructing a fluorescent light image from said collected and stored signals; and ~~signals, and~~

deriving information from said DNA chip in accordance with information on said constructed fluorescent light image, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

29. (Currently Amended) A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, by detecting fluorescent lights generated from a fluorescent material on a DNA sample, comprising: ~~comprising the steps of:~~

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of multi-spot excitation lights or a sheet-shaped excitation light for a time Δt that is longer than a fluorescent light attenuation time so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, separating said fluorescent lights from said plurality of multi-spot excitation lights irradiated onto said DNA sample, ~~said fluorescent lights being emitted from respective multi-spots or sheet-shaped irradiation locations on said DNA sample that is obtained by irradiating said DNA sample with said excitation lights in the form of multi-spot excitation lights or sheet-shaped excitation lights,~~ said

multi-spot excitation lights including M microscopic spots having a diameter or focus-achieving width which is smaller than 3 μm and larger than 0.3 μm, said sheet-shaped excitation lights having a width that is smaller than 3 μm and larger than 0.3 μm, where M is the number of microscopic spots; ~~spots,~~

detecting fluorescent light images emitted from said DNA chip ~~sample~~ with use of a plurality of light detecting devices; ~~devices,~~

storing, individually, signals obtained from said respective light detecting devices; ~~devices,~~

changing, relatively, positions of said multi-spot excitation lights or said sheet-shaped excitation light ~~lights~~ and a position of said DNA chip ~~sample~~ so as to store said signals in sequence; ~~sequence,~~

collecting said stored signals over a desired range on said DNA chip; ~~sample,~~

constructing a fluorescent light image from said collected signals; and ~~signals, and~~

deriving information for said DNA chip in accordance with information on said constructed fluorescent light image, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

30-35. (Withdrawn)

REMARKS

This paper is responsive in any manner indicated below.

PENDING CLAIMS

Claims 1-35 were pending, with Claims 1-11 and 18-29 under consideration and subject to examination in the final Office Action mailed 20 November 2002. Unrelated to any prior art, scope adjustment or rejection, appropriate claims have been amended in order to adjust a clarity and/or focus of Applicant's claimed invention. That is, such changes are simply refocused claims in which Applicant is presently interested. At entry of this paper, Claims 1-35 remain pending in the application, with Claims 12-17 and 30-35 withdrawn from consideration and Claims 1-11 and 18-29 subject to further consideration and examination.

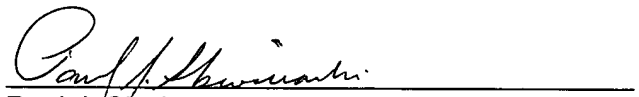
STATEMENTS OF SUBSTANCE/EXAMINER INTERVIEWS ACKNOWLEDGED

The following pertains to the personal and telephonic Examiner Interviews held by and between primary Examiner Bradley L. Sisson and Applicant's representative Paul J. Skwierawski, Reg. No. 32,173, a personal Interview conducted at the Examiner's Office on 9 September 2003, and a telephonic Interview conducted on 29 September 2003. Applicant and the undersigned representative again gratefully acknowledge such Interviews, and again thank the Examiner. Ones of the present pending claims under consideration have been amended in a manner believed consistent with amendments discussed during the aforementioned interviews.

CONCLUSION

This Preliminary RCE Amendment is being filed prior to a first Action on the merits in the subject application, and is therefore timely. No Petition or fee is required or possible for entry of this paper. Please charge any shortage in the fees due in connection with the filing of this paper to ATS&K Deposit Account No. 01-2135 (500.39147X00).

Respectfully submitted,



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